

The Warfighter Nutrition Guide

# 17

## The High Mileage Warrior Athlete

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the High Mileage Warfighter

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or Hypertension

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(CHD)

Type II Diabetes

Metabolic Syndrome

Cancer

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## Key Points

- Try to maintain weight minimize weight cycling—multiple episodes of weight loss.
- Pain from arthritis can be reduced by choosing healthy foods and foods high in anti-inflammatory compounds.
- NSAIDs should be used on a very limited basis.
- Foods, not supplements, should be the primary source of nutrients. Food is the best and cheapest way to take in essential nutrients.
- The risks of developing hypertension, coronary heart disease, diabetes, and cancer increase with age. Eating the right type of foods can limit risk factors associated with these chronic diseases.

**T**he aging warrior athlete is concerned about general health. Punishment from years of heavy physical activity can take a toll on Warfighters. This chapter will look at various diseases associated with aging and what can be done to promote good health into retirement. Major health problems can include arthritis, musculoskeletal injuries, weight gain, hypertension, coronary heart disease, Type II diabetes, metabolic syndromes, and cancer. Each will be briefly discussed.

## Dietary Approaches for the High Mileage Warfighter

Many foods, or dietary components, contain biologically active substances that may confer health benefits or desirable physiological effects beyond basic nutrition. Such foods are now called “functional foods.” Knowing which foods contain these important components allows greater control of personal health through food choices. Foods that impart specific health benefits include fruits and vegetables, whole grains, fortified or enhanced foods and beverages. The health-promoting attributes of many traditional foods are being discovered, and new food products with beneficial components are being developed. Selected functions served by food components would include:



Table 17–1. Examples of Functional Food Classes

Carbohydrates
Carotenoids
Fiber
Flavonoids
Isocyanthionates
Minerals
Phenolic Acids
Phytoestrogens
Plant Sterols
Prebiotics
Probiotics
Vitamins

- Restoring fluid balance.
- Improving endurance.
- Enhancing muscle strength.
- Preventing muscle/joint injuries or fatigue.
- Enhancing immune function.
- Preventing heart disease and diabetes.
- Preventing high blood pressure.
- Reducing pain and inflammation.

[Click to look up information on various health topics, prescription and non-prescription drugs, and functional food classes.](#)

## Dependence on Vitamin M (Ibuprofen)

Ibuprofen is a non-steroidal anti-inflammatory drug (NSAID) used to relieve pain, fever, and inflammation. It is commonly known as Vitamin M among the military community because of its frequent use. Some Warfighters are known to take up to 2 grams/day. The use of ibuprofen is not without risks. Common side effects include gastrointestinal distress, raised liver enzymes, salt and fluid retention, and hypertension. The risk of myocardial infarction appears to be higher among chronic users of ibuprofen than non-users.

Some foods or food components can serve as alternatives to NSAIDs (see Chapter 12 for a list of these products). The alternatives are both dietary and exercise oriented. Table 17–2 presents a list of products that are recognized for providing pain relief. Some can be taken as foods rather than supplements.

☀ Click here for more information on inflammatory arthritis.

☀ Click here for more information on osteoarthritis.

Table 17–2. Anti-Inflammatory Foods and Dietary Supplements

Substances	Significant Sources
Glucosamine	No food sources. Dietary supplements are derived from hard outer shells of shrimp, lobsters, and crabs.
Chondroitin	No food sources. Dietary supplements sources are derived from shark and beef cartilage or cow trachea.
Vitamin E	Poultry, seafood, vegetable oils, wheat germ, fish oils, whole-grain breads, fortified cereals, nuts and seeds, dried beans, green leafy vegetables, fruits, and eggs.



Table 17–2. Anti-Inflammatory Foods and Dietary Supplements

Substances	Significant Sources
Selenium	Tuna, wheat germ, garlic, whole grains, sunflower seeds, eggs, and Brazil nuts.
Omega-3 Fatty Acids	Cold water fish (salmon, mackerel, sardines, and herring), flaxseed, soybeans, soybean oil, pumpkin seeds, and walnuts.
Capsaicin Cream (from chili peppers)	Pharmacies and health food stores.
Bioquercitin	Apples, yellow and red onions, cherries, certain citrus fruits, leafy vegetables, broccoli, raspberries, black tea, green tea, red wine, and red grapes.
Methylsulfonylmethane or MSM	Onions, garlic, and cruciferous vegetables, such as cabbage and broccoli.



Dietary sources of antioxidants are superior to single or combined antioxidant supplements.

## Antioxidants

Oxidation, or the production of free radicals, is a normal consequence of strenuous exercise, exposure to UV-radiation, pollutants, chemicals, and extreme environments, and just living. Usually the body's natural defense systems, or “antioxidants” can neutralize free radicals and render them harmless. However, the body can be overwhelmed by free radicals, which may result in structural and functional damage. Inflammation, infection and muscle injury from exercise may reflect an inability to defend against oxidant stress. In addition, free radical damage contributes to aging and a host of illnesses, including cancer and heart disease.

People who chew tobacco should make sure their diets are high in antioxidants.

A well-balanced diet providing many antioxidant-rich foods supports the body's natural defense against free radical threats and protects against tissue damage. Importantly, more than 4,000 compounds in foods act as antioxidants. These could also be considered functional foods. The most well known antioxidants are vitamins C and E, beta carotene and the mineral, selenium. However, those are only a few of the many substances.

[Click here to see a list of foods high in antioxidants.](#)

☀ [Click here for more information on antioxidants.](#)

Coenzyme Q10 is sold as a dietary supplement, but the FDA does not “approve” dietary supplements for effectiveness.



## Coenzyme Q10

Coenzyme Q10 (also known as ubiquinone or CoQ10) is a vitamin-like substance made by the body. It is essential for producing the energy (ATP) that makes cell function. Tissue levels of CoQ10 decrease with age and are low in some chronic diseases (heart, cancer, diabetes, hypertension). Physicians sometimes prescribe CoQ10 to increase tissue levels, but the effectiveness of CoQ10 is not definitive. However, it appears to help with mild hypertension.

It is also important to note that statins inhibit the body’s ability to make CoQ10. Some health care providers request that Warfighters taking statins should also take CoQ10. This should be done under the guidance of a physician and at the appropriate dose.

[Click here for more information from Medline Plus on Coenzyme Q10.](#)

[Click here for more information from the Mayo Clinic on Coenzyme Q10.](#)

## A Well-Balanced Diet

A well-balanced diet of fruits, grains, and vegetables will provide the requisite antioxidants and other nutrients. Many studies have shown that people who eat a well-balanced diet are less at risk for developing many chronic diseases.

Eat at least 4 servings of fruit and 5 servings of vegetables daily.

## Arthritis and Musculoskeletal Injuries

About one-third of U.S. veterans suffer from some form of arthritis, which may be due to orthopedic injuries sustained on active duty. Also, musculoskeletal injuries are the leading cause of medical profiles for active duty personnel. This rate is double that seen in non-veterans. Because military training imposes a significant risk for musculoskeletal injuries, it may be inevitable that Warfighters are likely to develop some form of arthritis. However, the pain can be minimized by choosing foods high in various nutrients.

## Osteoarthritis

Rates of osteoarthritis are on the rise within the military. Osteoarthritis, which occurs when cartilage in the joint deteriorates, can be extremely painful. Being overweight is a major risk factor for osteoarthritis, so weight loss may relieve some of the joint pain. Another approach to pain reduction is low-impact exercise. Moderate cardiovascular exercise and strength training will improve physical performance and reduce pain.

## Treatment

Traditional methods, such as prescription drugs and surgery, are available to relieve discomfort and improve mobility but these approaches will not lead to a cure. Alternative therapies include dietary manipulations. Consuming foods high in anti-inflammatory substances (green vegetables, carrots, avocados, pecans, soy products, brown rice, millet, oats, wheat, and barley, sesame, flax, and pumpkin seeds) and cold-water fish (salmon, sardines, herring, and tuna), and minimizing dietary intake of alcohol, coffee, sugar, and hydrogenated fats (margarine).

Two popular supplements for arthritis and musculoskeletal injuries are glucosamine and chondroitin sulfate. They are widely used and prescribed, but more information is needed to determine the best dose and form.

## Weight Gain and Weight Maintenance

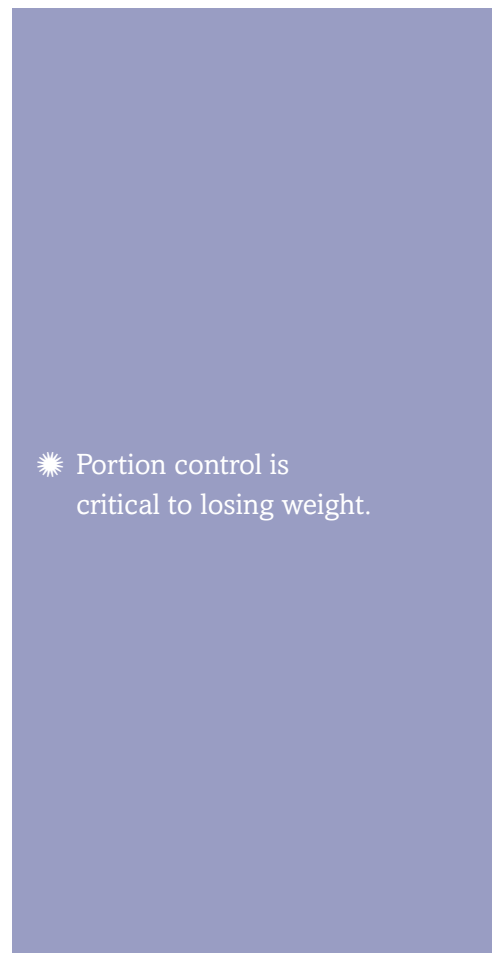
As the warrior ages, it is easy to increase body weight and difficult to take it off. Food quality, sleep hygiene, and portion control are very important issues for maintaining the desired body weight.

## Food Quality

The quality of food is especially important for high mileage Warfighters. Decreasing the amount of “junk food” in the diet is essential as you age. “Junk” foods not only add chemicals and processed food fillers to the body, but also empty calories. Eating sweets and highly processed foods, like potato chips, store purchased baked goods, and alcohol, deplete the body of high performance catalysts needed for other functions. They also add toxins to a healthy, fine-tuned body.

## Quality of Sleep

There is more to weight gain than food and exercise. Sleep habits can negatively affect body weight. Adequate rest is essential when possible. The fewer hours slept, the higher the chance of being overweight.



## Preventive Measures

- Increase sleep, when possible.
- Count and contain the number of “Happy Hour” drinks consumed.
- Keep up the cardio workouts—focus on long, slow, distance training for better fat utilization.
- Combine cardio and strength training at least three times a week.

## Weight Loss

As discussed in Chapter 2, energy intake and energy expenditure must be balanced to maintain weight. Weight loss can be made easy following this principle: less “junk” foods and more exercise equal weight loss, right? Yes and no. In the ideal world this would work, but numerous life variables, like parties, social drinking, and binge eating, get in the way. See Chapter 2 for tips on how to make weight loss a part of every day life are provided

## Yo-Yo Dieting

Yo-yo dieting, or weight cycling, is defined as repeated weight loss by repeated dieting and, when more food is introduced, subsequent regaining of weight. Repeated weight gains and losses can cause health problems. As a Warfighter, dieting may not be a major issue, except when returning home. Once home, binge eating and drinking often occur, which can result in a rapid weight gain (see Chapter 16).

## High Blood Pressure, or Hypertension

High blood pressure, or hypertension, is the most common “heart” condition among active duty personnel. The major behaviors to consider when trying to lower or prevent high blood pressure include:

- Keeping a healthy weight: as little as a 5-10% weight loss can drop blood pressure significantly.
- Being moderately physically active every day of the week, if possible.
- Eating a healthy diet.
- Avoiding foods high in sodium.
- Drinking alcoholic beverages in moderation.

Blood pressure is measured as two numbers—systolic (heart contracts) over diastolic (heart relaxes) pressure. Normal blood pressure values are less than 120 (systolic) and 80 (diastolic) mm Hg. Values higher than 120 and 80 may be a problem and should be discussed with a physician.



If you are at risk for hypertension, the Dietary Approaches to Stop Hypertension (DASH) eating plan is the diet most often recommended. In brief, the plan suggests the following:

- Eating more fruits, vegetables, and low-fat dairy foods.
- Cutting back on foods high in saturated fat, cholesterol, and total fat.
- Eating more whole grain products, fish, poultry, and nuts.
- Eating less red meat and sweets.
- Eating foods rich in magnesium, potassium, and calcium.
- Reducing sodium (salt) to 1,500 mg a day (about  $\frac{2}{3}$  teaspoon).

[Click here for more information on the DASH diet.](#)

## Coronary Heart Disease (CHD)

The high mileage warrior athlete is not invincible from coronary heart disease (CHD). Age naturally increases the risk, if diet is neglected. Maintaining good eating patterns and cardiovascular fitness can decrease the high mileage warrior's chance of developing CHD.

Eating fruit, vegetables and whole grains is a good place to start. Dietary guidelines from the American Heart Association are provided below.

Building Blocks for Life	
Healthy Eating Patterns	Healthy Body Weight
<ul style="list-style-type: none"> <li>• Eat a variety of fresh fruits and vegetables.</li> <li>• Eat whole grain pastas and rice.</li> <li>• Select low-fat products.</li> </ul>	<ul style="list-style-type: none"> <li>• Balance energy needs.</li> <li>• Physical activity.</li> <li>• Avoid the "Apple Shape" body.</li> <li>• Waist girth needs to be below 40".</li> </ul>
Desirable Blood Lipid Profiles	Desirable Blood Pressure
<ul style="list-style-type: none"> <li>• Limit use of saturated fats.</li> <li>• Avoid trans fats.</li> <li>• Replace saturated fats with fats from vegetables, fish, and nuts.</li> </ul>	<ul style="list-style-type: none"> <li>• Limit use of salt.</li> <li>• Limit alcoholic consumption (2 for a day).</li> <li>• Maintain body weight.</li> <li>• Follow DASH Diet.</li> </ul>

A healthy, well-balanced diet is more than fueling muscles; it also protects the heart.



Table 17–3. Risk Factors for CHD

Diabetes
Cholesterol (HDL/LDL)
High Blood Pressure
Smoking/ Tobacco Use
Alcohol Consumption
Family History of Heart Disease



## Lowering Risks

The risk of CHD can be lowered, but some factors cannot be controlled:

- Age.
- Gender: Men have an increased risk of developing heart disease.
- Family history of cardiovascular disease or diabetes.

Luckily, there are some factors for which you do have control. They include the following:

- Diet.
- Exercise patterns.
- Annual checkups.
- Frequent blood pressure screenings.
- Smoking history.
- Lipid profile.

Eating a variety of fish  
can improve lipid levels!

## Lipid Profiles

A lipid profile is a panel of tests used to determine the risk of CHD. The test measures levels of Total Cholesterol, High-Density Lipoprotein Cholesterol (HDL or good cholesterol), Low-Density Lipoprotein (LDL or bad cholesterol) and triglycerides in blood. Physicians use the results (in combination with other known risk factors) to develop a treatment plan, which should be treated seriously, and to assess the effectiveness of the plan.

### Treatments for High Risk Lipid Profiles

Three easy treatments for reducing high risk lipid profiles include:

- Change your diet.
- Exercise regularly (aerobic exercise).
- Quit smoking.

## Nutritional Choices to Protect Your Heart

The easiest way to protect the heart is by choosing foods known to be effective in reducing the risk of CHD. Some foods known to decrease the risk of developing CHD are presented in Tables 17–4 and 17–5..



Table 17–4. Heart Healthy Foods

Soy	Isoflavones compounds in soy products may reduce LDL (“bad”) cholesterol. Enjoy foods such as tofu, soy nuts, soy flour, and enriched soymilk.
Beans	Eating a cup of beans daily, no matter which kind, can lower cholesterol by 10% in six weeks.
Salmon	Omega-3 fatty acids—found in salmon and other cold-water fish—help lower LDL (“bad”), raise “good” HDL cholesterol, and lower triglycerides.
Avocado	A great source of heart-healthy mono-unsaturated fat that may help raise HDL (“good”) and lower LDL (“bad”) cholesterol levels.
Garlic	Garlic helps stop artery-clogging plaque from forming at its earliest stage by keeping individual cholesterol particles from sticking to artery walls.
Spinach	A daily ½ cup of spinach, which is rich in lutein, guards against heart attacks by helping artery walls “sluff off” cholesterol that causes clogging.
Walnuts, Cashews and Almonds	These nuts have all been linked to healthy hearts and contain vitamin E, monounsaturated fats, and magnesium.
Tea	Antioxidants in green tea lower total cholesterol levels and improve the ratio of HDL (“good”) to LDL (“bad”) cholesterol.
Dark or Bittersweet Chocolate	The flavonoids in dark chocolate help keep blood platelets from sticking together and may even help keep arteries unclogged.

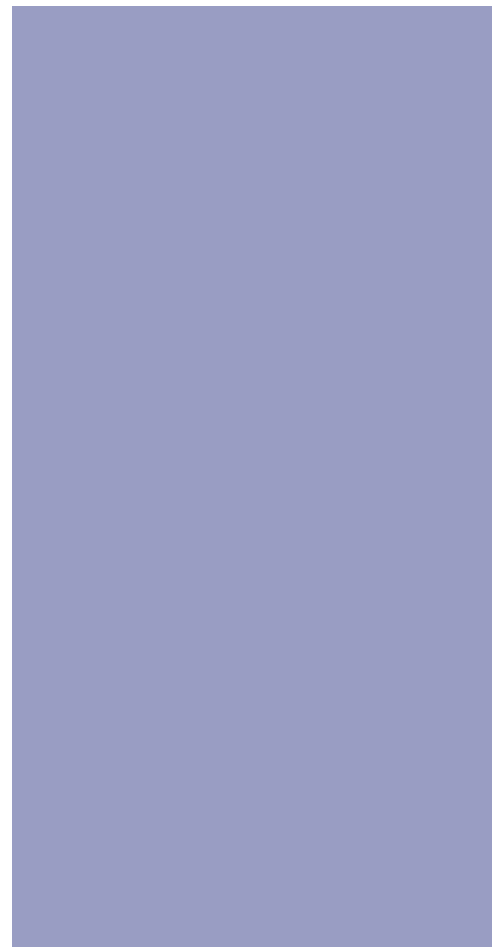
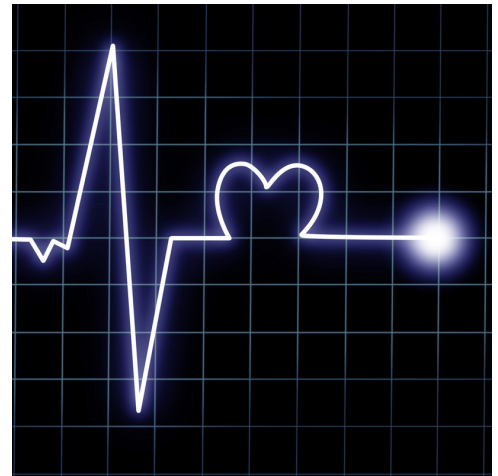


Table 17–5. Nutrients that Protect the Heart

Nutrient	Foods	Risks Reduced
Soluble fiber	Oats, oat bran, barley, rye, flax seed, legumes, psyllium husk, dried fruits, apples, pears, citrus fruit, carrots, nuts, dried beans, and peas.	Helps lower blood cholesterol.
Omega-3 fatty acids	Cold water fish, such as salmon, halibut, scallops, tuna, mackerel, cod, shrimp, snapper, and sardines, and vegetables such as flaxseeds, pumpkin seeds, sesame seeds, walnuts, soybeans, dried cloves, cauliflower, mustard seeds, boiled cabbage, broccoli, romaine lettuce, spinach, dried oregano, tofu, brussels sprouts, green beans, strawberries, and turnip greens.	Lowers blood pressure and triglycerides; helps prevent clot formation and irregular heart beats; defends against inflammation.
Vitamin B6	Beans, nuts, legumes, eggs, meats, fish, whole grains, and fortified breads, and cereals.	A deficiency of any will increase homocysteine levels, which is associated with risk of coronary heart disease.
Vitamin B12	Eggs, meat, poultry, shellfish and milk products.	
Folate	Fortified grains, leafy green vegetables, legumes, seeds, and liver.	
Vitamin E	Wheat germ, corn, nuts, seeds, olives, vegetable oils (corn, sunflower, soybean, cottonseed), spinach and other green leafy vegetables, and asparagus.	Limits LDL oxidation and slows down plaque formation.



## Drug Treatments to Improve Lipid Profiles

Many physicians prescribe pharmaceutical agents to improve lipid profiles, because they are highly effective. Table 17–6 provides a snapshot of drugs prescribed to Warfighters, with an emphasis on statins. Some people who take statins develop exercise-related rhabdomyolysis, or muscle breakdown, which can be dangerous. Physicians may recommend taking Coenzyme Q10 in combination with statins, but evidence to support this is lacking. However, taking 50 mg daily of a USP approved Coenzyme Q10 supplement cannot hurt and may be helpful, particularly if there is a family history of high cholesterol levels.

Table 17–6. Classes and Types of Drugs to Improve Lipid Profiles

Class	Type	Expected Result
Resin	Cholestyramine (Questran) and Coestipol (Colestid).	<ul style="list-style-type: none"> <li>• Lowers cholesterol by binding bile acids in gastrointestinal tract.</li> </ul>
Triglyceride-lowering Drugs	Fibrates (Lopid or Tricor, nicotinic acid).	<ul style="list-style-type: none"> <li>• Reduces triglyceride production and removes it from circulation.</li> <li>• Increases HDL levels.</li> </ul>
Statins	Fluvastatin (Lescol), Lovastatin (Mevacor), Simvastatin (Zocor), Pravastatin (Pravachol), Atorvastatin (Lipitor).	<ul style="list-style-type: none"> <li>• Reduce production of cholesterol in liver.</li> <li>• Reduces LDL by up to 40%.</li> <li>• Helps reduce size of plaques on artery walls.</li> </ul>

Some research shows that persons taking statins and consuming foods high in omega-3 fatty acids have a better chance of avoiding heart problems than those who took only statins. Again, eating foods high in omega-3 fatty acids may help protect against heart disease.

The primary food sources of omega-3 fatty acids are the oils from some fish and plants. Cold-water fish, such as salmon, mackerel, halibut, sardines, and herring, are rich sources. Plants that contain oils with omega-3 fatty acids include flaxseeds, soybeans, pumpkin seeds, and walnuts. New Zealand green lipped mussels are also an excellent source of omega-3 fatty acids.



Type II diabetes, which is closely related to obesity and physical inactivity, can be controlled by diet and regular exercise.



## Type II Diabetes

The incidence of Type II diabetes among adults in the military has risen markedly in the last decade, and is expected to double in the next 50 years. Those with diabetes are twice as likely to develop cardiovascular problems than those who are not diabetic. The prevalence of Type II diabetes among high mileage Warfighters is unknown, but certainly of concern because if undiagnosed and untreated, the risk of developing other chronic diseases increases.

## Metabolic Syndrome

Metabolic Syndrome, a disorder of the 21st century, is brought on by a sedentary lifestyle, stress, poor dietary choices (fast foods and highly processed foods), and other unhealthy lifestyle choices. About 10 years ago, before we understood the various contributing factors, this constellation of factors (which occur together) was called “Syndrome X.” Now it is clearly recognized as Metabolic Syndrome. In particular, belly fat or central adiposity is present. “Central obesity” is determined by measuring waist circumference: a man with a waist circumference  $\geq 37$  inches (94 cm) is considered at risk. However, for Metabolic Syndrome to be diagnosed, at least two of the following other factors must also be present:

- Serum triglyceride levels are  $\geq 150$  mg/dl or being treated for this lipid problem.
- Serum HDL cholesterol levels are  $< 40$  mg/dl.
- Systolic blood pressure is  $\geq 130$  or diastolic blood pressure is  $\geq 85$  mmHg or being treated for high blood pressure.
- Fasting plasma glucose concentration is  $\geq 100$  mg/dl or a diagnosis of Type II diabetes has been made.

If you think you have one or more of these “factors” you should consult your doctor about having metabolic syndrome.

## Cancer

Various factors contribute to the development of cancer: genetics, immune function, environment, and diet. A Mediterranean diet, fiber rich diets, and other diets high in colorful fruits and vegetables, protect against cancer. In contrast, a high alcohol intake, with the exception of moderate consumption of wine, has been associated with promoting some cancers. Wine appears to lower the risk of several chronic diseases, perhaps because of the high phytonutrient and antioxidant levels.

[Click here for a list of foods high in antioxidants.](#)

Some foods may inhibit cancer development.